

REMARKS

Summary

Claims 1-8 and 10-20 stand in this application. Claims 1, 11 and 17 are currently amended. Support for the current amendments may be found at least at Applicant's Specification, page 6, lines 1-24. No new matter has been added. Favorable reconsideration and allowance of the standing claims are respectfully requested.

35 U.S.C. § 103

At page 3, paragraph 5 claims 1-8 and 10-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Pub. No. 2002/0191533 to Chini et al. (hereinafter "Chini") in view of U.S. Patent Pub. No. 2003/0072379 to Ketchum (hereinafter "Ketchum"). Applicant respectfully traverses the rejection, and requests reconsideration and withdrawal of the obviousness rejection.

In responding to Applicant's arguments submitted in a previous response dated June 26, 2008, the Office Action states that the requisite motivation to combine the teachings of the Chini reference and the Ketchum reference may be found in Chini at paragraphs [0006] to [0008]. The Chini reference, at the given cites, states the following:

[0006] For example, as shown in FIG. 1, a power spectrum of a transmit signal (e.g., a HOMEPLUG.TM. packet) using an OFMD modulation technique is illustrated. As shown, four carriers associated with channels 10, 20, 40 and 60 are modulated with constant data (e.g., "11" for Differential Quadrature Phase Shift Keying "DQPSK"). This causes PSD peaks 100, 110, 120 and 130 at those carriers rising approximately eight decibels (8 dB) above the power spectrum 140.

[0007] As a result, in order to comply with strict Federal Communication Commission (FCC) power level standards and avoid interference to other users of

the band, the total power of the transmit signal must be reduced. This reduces signal quality (e.g., signal-to-noise ratio) detected at the receiver which, in turn, reduces coverage of the receiver, data throughput, and the like.

[0008] Thus, it would be advantageous to develop a modulation technique that mitigates PSD irregularities occurring at non-data bearing carriers.

As indicated above, Chini arguably discloses that non-data bearing carriers cause PSD irregularities. In paragraphs [0004] and [0005], however, Chini makes clear that constant or alternating data is modulated onto the non-data bearing carriers, which causes harmonics with concentrated energy at these non-data bearing carriers, thereby causing the PSD irregularities. The solution to this problem is given at paragraph [0022] as follows:

[0022] As shown in FIG. 2, the modulation of non-data bearing carriers with random data greatly mitigates the presence of power spectral density (PSD) irregularities at frequencies associated with non-data bearing carriers 220, 230 and 240 and 250. The reduction of PSD irregularities is due to the non-periodic nature of the modulated carrier. Thus, power is not concentrated at these portions of the power spectrum 200, but rather is continuously distributed.

Therefore, paragraphs [0006] to [0008] leads a skilled person to the solution of using random data in the non-data bearing carriers. This is precisely the opposite of “wherein the selected subcarrier is punctured prior to transmission by placing no modulated data or information in the selected subcarrier after the selection of the subcarrier to maintain or reduce transmitted power of the selected subcarrier” as recited in claims 1, 11 and 17. Therefore the paragraphs [0006] to [0008] would not lead a skilled person to combine the teachings of the Chini reference with the Ketchum reference.

Further, the Office Action requests the Applicant to clearly point out any specific reasons as to why the cited references are not combinable. Although Applicant maintains the contention that the Office Action fails to provide a *prima facie* case of obviousness, including a clear line of reasoning regarding why the cited reference are combinable, there are numerous reasons why a skilled person would not combine the cited references. For example, to establish a *prima facie* case of obviousness, all of the teachings of the cited references must be considered, even disclosures that teach away from the claimed invention. *See* MPEP § 2141.02. Furthermore, the proposed combination cannot render the cited references unsatisfactory for their intended purpose or change the principle of operation of a reference. *See* MPEP § 2143.01, for example. Thus, it is improper to combine references where the references teach away from their combination. *See* MPEP § 2145, for example. Here, the Chini reference teaches away from making the combination alleged in the Office Action because both the problem and solution provided by the Chini reference (as disclosed in paragraphs [0006] to [0008] and [0022]) both involve placing information (e.g., constant data, alternating data or random data) on non-data bearing carriers. Further, the Ketchum reference also teaches away from making the combination alleged in the Office Action because the Ketchum reference discloses the following at paragraph [0018]:

In accordance with various aspects of the invention, techniques are provided to determine the power allocation to different channels in an efficient and effective manner by determining bin energy and total energy at each antenna across all bins.

As indicated above, the Ketchum reference arguably performs power allocation across all bins regardless of any punctured subcarriers. This is clearly different from ““wherein the selected subcarrier is punctured prior to transmission by placing no modulated data or information in the selected subcarrier after the selection of the subcarrier to maintain or reduce transmitted power of the selected subcarrier....” Therefore, it is improper to make the combination of the Chini reference and the Ketchum reference as alleged in the Office Action.

In addition, the Office Action asserts that Ketchum discloses puncturing by selectively deleting some symbols, and that Ketchum does not add any information to a subcarrier during the puncturing process. Ketchum at the given cites, in relevant part, states:

In one technique, data for each transmission channel may be coded, modulated and allocated a power level based on the channel's CSI. By coding, modulating and allocating power separately for each transmission channel, the coding, modulation and the allocated power may be optimized for the SNR achieved by each channel. In one implementation of such a technique, a fixed base code is used to encode data, and the coded bits for each transmission channel are then punctured (i.e., selectively deleted) to obtain a code rate supported by that channel. In this implementation, the modulation scheme for each transmission channel is also selected based on the channel's code rate and SNR. (Emphasis added).

As indicated above, Ketchum arguably discloses puncturing by placing a reduced amount of bits into each transmission channel by selectively deleting bits from a transmission channel to obtain a particular code rate for the channel. Ketchum clearly states that “data for each transmission channel may be coded, modulated and allocated a power level.” By way of contrast, the claimed subject matter punctures by “placing no modulated data or

information in the selected subcarrier after selection of the subcarrier to maintain or reduce transmitted power of the selected subcarrier” and that “transmitted power is re-allocated to information carrying subcarriers to increase the signal-to-noise ratio of the communication link.” Ketchum therefore fails to teach or suggest puncturing by placing no modulated data or information in the selected subcarrier after the selection of the subcarrier to maintain or reduce transmitted power of the selected subcarrier. Rather, the technique described in Ketchum selectively deletes bits within a transmission channel in order to reach a desired code rate, but arguably continues to place modulated data and information into the punctured channel at a reduced rate. The Office Action fails to provide any citation to Ketchum supported by a convincing line of reasoning to support the assertion that Ketchum does not add any information to a subcarrier during the puncturing process.

Although Applicant disagrees with the broad grounds of rejection set forth in the Office Action, Applicant has amended independent claims 1, 11 and 17 in order to facilitate prosecution on the merits. Support for the current amendments may be found at least at Applicant’s Specification, page 6, lines 1-24.

Claims 1, 11 and 17 have been amended to recite “and when transmitted power of the selected subcarrier is reduced the transmitted power is re-allocated to information carrying subcarriers to increase the signal-to-noise ratio of the communication link.” At least this language is not shown disclosed by the Chini reference or the Ketchum reference.

Applicant respectfully submits that claims 1-8 and 10-20 define over the Chini reference and the Ketchum reference because the cited references, taken alone or in

combination, fail to teach or suggest every element recited in claims 1-8 and 10-20. As correctly noted in the Office Action, Chini fails to disclose the above-recited language of independent claims 1, 11 and 17. Office Action, Page 4. As previously described, the Ketchum reference arguably performs power allocation across all bins regardless of any punctured subcarriers. Ketchum, Paragraph [0018]. This is further evidenced when Ketchum states:

FIG. 2 depicts a flow diagram of a process 200 to determine the allocation bin energy level to each OFDM frequency bin at each antenna and total energy across all bins and antennas in accordance with various embodiments of the invention.

It appears that the power allocation scheme taught by Ketchum does not account for any punctured subcarriers. This is clearly different from ““wherein the selected subcarrier is punctured prior to transmission by placing no modulated data or information in the selected subcarrier after the selection of the subcarrier to maintain or reduce transmitted power of the selected subcarrier...””

For at least these reasons, Applicant submits that claim 1 is patentable over the cited references, whether taken alone or in combination. In addition, claims 11 and 17 recite features similar to those recited in claim 1. Therefore, Applicant respectfully submits that claims 11 and 17 are not obvious and are patentable over the cited references for reasons analogous to those presented with respect to claim 1. Accordingly, Applicant respectfully requests removal of the obviousness rejection with respect to claims independent claims 1, 11 and 17. Furthermore, if an independent claim is non-obvious under 35 U.S.C. § 103, then any claim depending therefrom is non-obvious. *See* MPEP § 2143.03, for example. Accordingly, Applicant respectfully requests withdrawal of the

obviousness rejection with respect to claims 1-8, 10, 12-16 and 18-20 that depend from claims 1, 11 or 17, and therefore contain additional features that further distinguish these claims from the cited references.

Conclusion

For at least the above reasons, Applicant submits that claims 1-8 and 10-20 recite novel features not shown by the cited references. Further, Applicant submits that the above-recited novel features provide new and unexpected results not recognized by the cited references. Accordingly, Applicant submits that the claims are not anticipated nor rendered obvious in view of the cited references.

Applicant does not otherwise concede, however, the correctness of the Office Action's rejection with respect to any of the dependent claims discussed above. Accordingly, Applicant hereby reserves the right to make additional arguments as may be necessary to further distinguish the dependent claims from the cited references, taken alone or in combination, based on additional features contained in the dependent claims that were not discussed above. A detailed discussion of these differences is believed to be unnecessary at this time in view of the basic differences in the independent claims pointed out above.

It is believed that claims 1-8 and 10-20 are in allowable form. Accordingly, a timely Notice of Allowance to this effect is earnestly solicited.

The Examiner is invited to contact the undersigned at 724-933-9338 to discuss any matter concerning this application.

Appl. No. 10/607,729
Response Dated January 2, 2009
Reply to Office Action of October 1, 2008

Docket No.: P16727/1020P16727
Examiner: Qureshi, Afsar M.
TC/A.U. 2616

The Office is hereby authorized to charge any additional fees or credit any overpayments under 37 C.F.R. § 1.16 or § 1.17 to deposit account 50-4238.

Respectfully submitted,

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John F. Kacvinsky, Reg. No. 40,040
Under 37 CFR 1.34(a)

Dated: January 2, 2008

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